The Literature Review of Analytical Support to Defence Transformation: Lessons Learned from Turkish Air Force Transformation Activities

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ABSTRACT

In this study, we conveyed a literature review about defence transformation efforts of several armed forces. Literature review is summarized in the following topics: Transformation aspect, the need for transformation, the methods/methodology used, and activities done/will be done in the future. Following the literature review, we give some information about the lessons learned so far about transformation activities.

1.0   INTRODUCTION: TRANSFORMATION VERSUS PROCESS IMPROVEMENT

The word "transformation" means "a complete change in someone or something" according to a dictionary [1]. When the term "transformation" comes to the military environment, it refers to the whole military system including process implemented, personnel involved, document referenced, material and equipment used, mission accomplished, values and cultured honered.

The transformation differs from ordinary process improvement initiatives in such ways that transformation must be accomplished while carrying out the mission, has to address attitude and organizational cultural change and must include everyone regardless of any status.

Allied Command Transformation (ACT) [2] is NATO's leading agent for change, driving, facilitating, and advocating continuous improvement of Alliance capabilities to maintain and enhance the military relevance and effectiveness of the Alliance. Strategic Objectives of ACT are as follows:

Provide appropriate support to NATO missions and operations. Lead NATO military transformation. Improve relationships, interaction and practical cooperation with partners, nations and international organisations.

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The NATO members have launched their transformation activities, accordingly. In this article, the transformation activities of US Army and Air Forces, Royal Air Force, France Air Force, Spanish Air Force, Canadian Armed Forces and Turkish Air Force have mentioned in summary.

Transformation can be summarized as stated by the Secretary of the Army, Dr. Harvey, and the Army Chief of Staff, GEN Schoomaker, On July 11, 2005, as "Transforming the Way We Do Business" [3]. Business Transformation is summoned up as follows. "..to ensure its ability to provide the people, training, resources, quality of life, and infrastructure that will be critical to the continued success of America's Army". Besides Army, USAF defines transformation as "A process by which the military achieves and maintains asymmetric advantage through changes in operational concepts, organizational structure, and/or technologies that significantly improve warfighting capabilities or ability to meet the demands of a changing security environment [4]."

In broad terms, UK Royal Air Force (RAF) Transformation aims to:

- Improve the way in which we command, develop, deliver, manage and support the RAF,

- Develop an organisation that is operationally and capability focused, uses agile and adaptable processes shaped for the long term and makes best use of its people,

- Create a culture of continuous improvement and embed the behavioural changes needed to support an agile air force [5]".

Table 1: True North Goals of RAF.

We will stop improving when	
Morale Retain the right people as long as we need	**Quality** Do the right thing right every time
Delivery Deliver 100% of the required mil effect	**Cost** Are cost effective with zero waste

French Air Force [6] considered the transformation and initiated a Project called "Structural platform for the realization of Air Force human capital [7]" that aims at covering all of the human resources and payroll applications for French Air Force military personnel while downsizing its complex organization.

According to the Spanish Air Force [8], transformation to us means change, continuous improvement and quality in our daily endeavours. The gradually more complex threats our forces are facing demand a different approach to the way we understand the military and the way we are doing business. Experience gained in alliance and international operations are making clear the urgent need to work on some fundamental aspects in terms both of capabilities and of evolution of doctrines and structures.

Canadian armed forces [9] set the military strategy that aims for providing balanced investments across the four pillars upon which military capabilities are built – personnel, equipment, readiness and infrastructure – our plan will increase the size of the Forces and replace their core capabilities.

Turkish Air Force views transformation as to prepare the environment where new generation platforms will be in used during 2015's and to review organizational structure and culture, personnel attribute and the way we do the business in order to use the new generation platforms effectively.

In general, it is assumed that the following US Army vision can be extended into any countries' vision with little customization: Transformation roadmap should address the following action to some extend.

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Exemplifying the Best of World Class Enterprises that achieve sweeping savings while improving responsiveness, flexibility, and speed.

Inculcating a culture of continuous process improvement.

Targetting the organization that is characterized by their agility and "lean" organization structures.

Making high value decisions on new levels of situational awareness, enabled by enterprise solutions.

Focusing on increasing business acumen through professional development.

Reaffirming stature as an institution to be admired and modeled by the Public.

2.0   THE METHODS/METHODOLOGY USED IN TRANSFORMATION

"Transformation" can be stated as "the changing the way we do the business" in order to meet the increasing demand in a hyrid threat environment with a continuously decreasing military budget.

When it comes to changing the way of doing business, we take the professionally approved commercial practices and methodologies into consideration such as business process improvement, lean-six sigma, business process reengineering. There are various tools dedicated to improve the business processes. The important point is to know which tool is suitable for what type of problems.

What was satisfactory a few years ago barely passes today, and quite certainly will soon be below expectations. It is therefore irrelevant to discuss whether we have to improve, the question, rather, is how much do we improve and how quickly do we do it. [10]. Anderson developed "a business process improvement methodology" which is composed of seven phases including 45 technique/methods shown below Table-2. Depending on which phase the project is currently in and which task you want to solve, Table-2 serves you as a guideline for what tools are available [11]. Additionally, Table-3 is a guide for DMAIC methodology including 29 different methods [12].

Table 2: Tools for different phases in the process improvement work (7-Phase Methodology).

Develop performance priorities	Understand current process and performance shortcoming	Collect data about the performance shortcoming	Analyze the performance shortcoming	Generate ideas and choose among them	Develop implements	Implement Improvement
Kano model	Relationship mapping	Sampling	Critical incident	Brainstorming	Streamlining	A-T analysis
SWOT analysis	Traditional flowchart	Surveying	Pareto chart	Brainwriting	Idealizing	Tree diagram and process decision program chart
Comperative forces analyses	Cross-functional flowchart	Check sheet	Cause-and-effect chart	Crawford slip method	QFD	Force field analysis
Quality Function Deployment (QFD)	Flowchart divided into process segments	Problem concentration diagram	Five whys analysis	Nominal group technique	Statistical Process Control	
Trend analysis	Several-leveled flowchart		Scatter chart	Six thinking hats	Six Sigma	
Spider chart	Flowcharts with statistics		Histogram	Paired comparisons	Business process reengineering	
Performance matrix			Relations diagram		Benchmarking	
Criteria testing			Matrix diagram			
Strategy map			Is-is not analysis			
			Bottleneck analysis			

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Table 3: DMAIC Methodology (5-Phase Methodology).

Define	Measure	Analyze	Improve	Control
Project Charter	Prioritization Matrix	5 Whys Analysis	Brainstorming	Control Charts
Stakeholder analysis	Process Cycle Efficiency	Brainstorming	Flow Charting	Flow Diagrams
Suppliers, Inputs, Process, Output, and Customers (SIPOC)	Time Value Analysis	Cause and Effect Diagram	FMEA	Charts to compare before and after such as Pareto Charts
Voice of the Customer	Pareto charts	Affinity Diagrams	Stakeholder Analysis	Quality Control Process Chart
Affinity Diagram	Control charts	Control Charts	Setup Reduction	Standardization
Kano Model	Run Charts	Flow Diagram	Queuing Methods for Reducing Congestion and Delays	
Critical-To-Quality (CTQ) tree	Failure Modes and Effect Analysis (FMEA)	Pareto Charts	5S's Method	
		Regression Analysis	Kaizen	
		Scatter Plots		

Table 4: Comparing 7-Phase Methodology with the 4 and 5-Phase Methodologies.

7-Phase Methodology	Scope [13]	DMAIC	PDCA
Develop performance priorities	This is a preliminary stage that precedes specific improvement projects, and the aim is to understand which business proceses will be important to improve.	Define	Plan
Understand current process and performance shortcoming	This is normally the first step in an improvement project, where the objective is to understand how well the process works at the moment and what seems to characterize the problem experienced.	Measure	Plan
Collect data about the performance shortcoming	Business process improvement work is at its best when it is based on facts and data, and the purpose here is to gather relevant information for the ensuing analyses.	Measure	Plan
Analyze the performance shortcoming	In this stage you apply different techniques to try to understand the true nature of the problem causing the less-than-desired performance.	Analyze	Plan
Generate ideas and choose among them	This is a creative phase to generate a broad range of ideas about what causes the performance shortcoming, but it is also a selection of tools that can be used in other phases of the improvement process.	Improve	Do
Develop implements	This is the most exciting stage of the improvement process, where the objective is to create new solutions or process designs that will eliminate the performance shortcoming.	Improve	Check
Implement Improvement	While perhaps sounding easy compared with finding ways to improve the process, implementing lasting change can often be the hardest part of an improvement project.	Control	Ack

As seen in Table-4, even though the three methodies are set up in different words, they are actually corresponding to each other. Furthermore, three methodies share the same methods/techniques such as Affinity Diagram, Kano Model, and brainstorming.

There are over 60 methods/techniques that can be implemented during process improvement activities without getting PhD. level support.

It can be used as a reference for process improvement [14]. In addition to that the US DOD Transformation Guidebook includes how to implement transformation activities from the very beginning phase to the end-state as well as present very good reference list including civilian and governmental resources.

3.0 THE LESSONS LEARNED FROM TURKISH AIR FORCE TRANSFORMATION ACTIVITIES

Turkish Air Force Transformation Manegement Center (TMC) is established in 2008 and has just kicked off its Transformation Activities at September 2009. Here are the lessons learned from TMC activities:

Take advantage of other countries' experience and knowledge.

Make the transformation activities as parts of personnel daily life.

Get the highest level support for the transformation activities.

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Plan the whole activities top-down, implement bottom-up.

Never underestimate professional assistance.

Periodically review your results and evaluate the progress with the plan.

Team members should be knowledgeable and responsible for the process.

Take the logistics processes rather than management level processes at first.

Give priority to the processes with available data and accomplished comparatively in a short time.

4.0   THE RESULT

Transformation activities are never-ending. In other words, continous process improvement will be in place as long as military forces exist.

Transformation shouldn't be taken as a programe or project; instead it should be taken as an opportunity to adapt the continous development culture into personnel minds.

Transformation demands wise planning, hard-work, continuous leadership guidance, address for changing the minds before the processes itself.

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